Claim(s)

[0049]   Having thus described the preferred embodiments, the invention is now claimed to be:

1.   A method of allocating CDMA codes from a set thereof for use in connection with a wireless network, said method comprising:

(a)   identifying a desired size of a code to be allocated;

(b)   determining if there exists a code of the desired size whose sibling is unavailable;

(c)   allocating a code of the desired size whose sibling is unavailable when the determination of step (b) is that there does exist a code of the desired size whose sibling is unavailable;

(d)   determining if there exists a code of smaller than the desired size whose sibling is unavailable when the determination of step (b) is that there does not exists a code of the desired size whose sibling is unavailable;

(e)   identifying a code of smaller than the desired size whose sibling is unavailable when the determination of step (d) is that there does exist a code of smaller than the desired size whose sibling is unavailable; and,

(f)   allocating a code of the desired size which is a descendant of the identified code when a code is identified in step (e).

2.   The method according to claim 1, wherein step (d) comprises:

progressing iteratively through successively smaller sizes starting at a size just smaller than the desired size; and,

determining, with each iteration, if there exists a code of the size progressed to whose sibling is unavailable.

3.   The method according to claim 2, wherein the progressing continues only until a code of the progressed to size whose sibling is unavailable is found to exist.

4. The method according to claim 3, wherein the identified code of step (e) is of the progressed to size reached in step (d).

5. The method according to claim 1, further comprising:

dividing the set of codes into a plurality of families; and,

selecting a particular family from the plurality thereof such that step (a) through (f) are carried out with respect to the codes in the particular family, wherein the particular family selected has a number of unavailable codes of a largest size which is no greater than any other unselected family.

6. A Walsh code allocator for use in connection with a wireless telecommunications network, said allocator comprising:

a receiving means that receives a request for a Walsh code;

determination means for choosing, based on the request received, a Walsh code family from which the allocator selects a Walsh code, said determination means choosing from a plurality of different Walsh code families which each include a plurality of Walsh codes of at least two different sizes;

selection means for selecting, from the family chosen by the determination means, a Walsh code suited to the request received, said selection means selecting the Walsh code such that the selected Walsh code is mutually orthogonal to Walsh codes which are currently busy, and such that an allocation of the selected Walsh code results in blocking a minimum number of Walsh codes not already blocked; and,

allocation means for outputting from the allocator at least one of;

the selected Walsh code when a Walsh code is selected by the selection means, and

an indication that a Walsh code suited to the request received is not available for allocation.

7. The allocator of claim 6, wherein the request received by the receiving means indicates a desired Walsh code size.

8.   The allocator of claim 7, wherein the selection means selects a fragmented Walsh code of the desired size when one exists, otherwise a Walsh code of the desired size is selected such that it is a descendant of a fragmented Walsh code of smaller than the desired size, said fragmented Walsh code of smaller than the desired size having a size that, compared to other fragmented Walsh codes of smaller than the desired size, is as close or closer to the desired size.

9.   The allocator of claim 8, wherein if no fragmented Walsh codes of a size smaller than or equal to the desired size exist within the family chosen by the determination means, then, via the allocation means, the allocator outputs an indication that a Walsh code suited to the request received is not available for allocation.

10.   The allocator of claim 6, wherein the determination means chooses the family including a particular Walsh code when the particular Walsh code is specified in the request received.

11.   The allocator of claim 10, wherein when no particular Walsh code is specified in the request, the determination means chooses the family with a lowest count compared to other families.

12.   The allocator of claim 6, wherein one of the plurality of Walsh code families is designated for high speed data traffic such that when a request is received for a Walsh code to be used in connection with high speed data traffic, the determination means chooses the designated family.

13.   The allocator of claim 6, further comprising:
a de-allocation means that updates fragment lists when busy Walsh codes cease being busy, said fragment lists having listed thereon fragmented Walsh codes.

14. A method of allocating a set of codes used to distinguish and isolate air interface channels of a wireless telecommunications network, said method comprising:

(a) dividing the codes into a plurality of families such that each family includes a plurality of codes, wherein each of said codes has a size and at least two codes in each family have different sizes;

(b) receiving a request for a code which identifies a desired size of code;

(c) choosing a family from which a code is to be selected for allocation;

(d) identifying a fragmented code in the chosen family provided one exists;

(e) selecting a code in the chosen family based on the identified fragmented code provided a fragmented code was identified, otherwise making no selection;

(f) allocating the selected code provided a selection was made, otherwise indicating that no code is available.

15. The method of claim 14, wherein the fragmented code identified is of the desired size provided one of that size exists, otherwise the fragmented code identified has a size which is smaller than the desired size and is as close or closer to the desired size when compared to any other fragmented codes of smaller than the desired size.

16. The method of claim 15, wherein the code selected is the identified fragmented code when the identified fragmented code is of the desired size, otherwise the code is selected from the identified fragmented code's progeny such that the selected code is of the desired size.

17. The method of claim 14, wherein when the requested received also indicates a specific code which is desired, the family chosen is that one which includes the specific code.

18. The method of claim 17, wherein when the request received does not indicate a specific code, the family chosen is that one which has a smallest combined number of blocked and busy codes of a largest code size.

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19.   The method of claim 14, wherein one of the plurality of families is designated for high speed data traffic such that when a requested is received for a code to be associated with high speed data traffic, the designated family is chosen.

20.   The method of claim 14, further comprising:

(g)   maintaining a list of fragmented codes; and,

(h)   updating the list of fragmented codes when busy codes cease being busy.